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ABSTRACT

A key concept underlying Equipped for the Future (EFF) relates to its contextualized approach to curriculum and instruction. While drawing on the body of cognitive research, research on the transfer of learning is of key importance for this principle. Effective learning requires not only acquisition but also active application of knowledge, skills, and processes. To encourage transfer to other contexts, effective learning requires the acquisition of a complex knowledge base including content knowledge, skills, and cognitive and metacognitive strategies. Learning is a function not only of the activity but also of the context and culture in which it takes place. The second half of this report presents three examples of program practices that support contextualized learning and reflect EFF theoretical foundations. The examples show the following: (1) how teachers and students use the EFF Framework to construct contextualized learning opportunities that focus on the development and practice of skills the students need to carry out activities and accomplish purposes in their lives; (2) how teachers use the framework to integrate "found lessons" that arise from in- or out-of-class student needs into an overall learning plan; and (3) how students use the framework to identify skills learned and practiced through real-world learning activities. Appendixes include a glossary and a list of 28 references. (YLB)

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EFF Research Principle: A Contextualized Approach to Curriculum and Instruction

EFF Research to Practice Note 3

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Equipped for the future

EFF Research Principle: A Contextualized Approach to Curriculum and Instruction

By Marilyn K. Gillespie

What Do We Mean by a Contextualized Approach?

A third key concept underlying Equipped for the Future (EFF) relates to its contextualized approach to curriculum and instruction. Instead of first teaching skills and knowledge separated from their context and hoping that learners will *end up* knowing how to transfer what they have learned to life outside the classroom, EFF teachers start with real-life contexts and weave these contexts into every stage of the teaching and learning process. Instruction and assessment are aimed directly at the skills and knowledge adults need to perform tasks they have identified as important and meaningful to them "right now" in their everyday lives. The focus is on the *application* rather than on the possession of basic skills and knowledge (Merrifield, 2000).

The contextualized approach to instruction draws on the same body of cognitive research described in *Research to Practice Notes 1* and *2*. Of key importance for this principle is research on the transfer of learning. Research shows that learning transfers from one context to another more effectively when the learner understands not only the facts but also the "big picture"—the underlying principles, patterns, and relationships—that is acquired through the application of knowledge (Glaser, 1992; Bransford, Brown, & Cocking, 1999; Greeno, Resnick, & Collins, 1997). This contextualized approach is also based on the recognition that the development of expertise requires that a learner develop not only content but also procedural knowledge, such as the metacognitive awareness of when and how to apply what has been learned. This kind of knowledge can be acquired only through practice (Pressley & Woloshyn, 1995; Hartman, 2001).

A contextualized approach to instruction also stresses the social nature of real-world activities (Wenger, 1998; Lave & Wenger, 1991), the value of building a learning community within the classroom, and the importance of incidental learning that takes place when knowledge and skills are acquired within a social context. For example, when the skill of "filling out forms" grows out of an immediate real-world need of immigrant learners and is addressed in a community of learners, issues such as understanding the conditions under which filling out forms is necessary, when and how to call in an "expert" such as a lawyer, and the benefits and drawbacks of asking family members for assistance become part of the curriculum. This *Research to Practice Note* focuses on the following key assumptions:

- **Effective learning requires not only the acquisition but also the *active application* of knowledge, skills, and processes.**
- **To encourage transfer to other contexts, effective learning requires the acquisition of a complex knowledge base including content knowledge, skills, and cognitive and metacognitive strategies.**
- **Learning is a function not only of the activity itself but also of the context and culture in which it takes place.**

The EFF publication *Results That Matter: An EFF Approach to Quality* presents five key principles that reflect the theoretical foundations of EFF. Program practices that support these principles provide guideposts by which programs, teachers, students, and their communities can assess their implementation of the EFF Framework. They help practitioners to better answer the questions "What does it mean to practice EFF?" and "What does EFF implementation look like in action?" These *Research to Practice Notes* will help you to:

- identify the research basis for the principles;
- learn key concepts and terms associated with the principles;
- see examples of how other programs have implemented the program practices;
- reflect on how you and your program can implement the program practices.

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Designs for Learning Environments

The authors of *How People Learn: Brain, Mind, Experience, and School* (Bransford, Brown, & Cocking, 1999) identified the following as key components that work together to make up a contextualized and mutually supportive learning system:

□ **Learner-centered environments.** Effective learning begins with what learners bring to the environment; this includes cultural practices and beliefs, as well as knowledge of academic content. Evidence shows that learners use their current knowledge to construct new knowledge and what they know and believe at the moment affects how they interpret new information.

□ **Knowledge-centered environments.** The ability to think and solve problems requires that knowledge of a subject area be accessible and linked to current understanding. Designs for subject area study should help students learn with understanding instead of promoting the acquisition of disconnected sets of facts and skills.

□ **Assessment-centered environments.** Students' thinking must be made visible, and feedback must be provided on an ongoing basis to give them the opportunity to revise and improve the quality of their thinking and understanding. The kinds of assessment chosen should reflect their learning goals.

□ **Community-centered environments.** The learning environment should promote a sense of community. Classroom norms should encourage students to learn from one another and support one another's improvement. Learning in school should be connected with outside learning activities.

What Research Says about Contextualized Learning

Effective learning requires not only the acquisition but the *active application* of knowledge, skills, and processes.

In recent years, an accumulating body of research evidence has demonstrated that the acquisition of content-related knowledge and skills alone is not sufficient for the development of expertise. To move from novice to expert levels of performance or competence, learners need to acquire both content knowledge and procedural knowledge related to when and how to apply what has been learned. (Procedural knowledge, including cognitive and metacognitive strategies, is described in *Research to Practice Note 2.*) Since procedural knowledge deals with the processing and application of skills, it can be learned only through action. For example, to develop procedural knowledge related to science, students need to simulate the kinds of activities real scientists do. To learn math, students need to think and act like mathematicians (von Glasersfeld, 1987; Glaser, 1992; Bransford, Brown, & Cocking, 1999). These same principles apply to workforce education, where nationwide studies (Secretary's Commission on Achieving Necessary Skills, 1991; Carnevale & Porro, 1994) have confirmed that acquiring job-related content and basic academic skills is not enough to prepare adults and youth to be effective on the job. Just as important are interpersonal, decision-making, and planning skills and the knowledge of when and how to apply these skills within the social context of the workplace. These skills require instructional approaches that focus on cooperative learning, apprenticeship models, and teamwork (Grubb, 1997; Kerka, 1997; National Association of Manufacturers, 2001).

Within adult education, the concept of contextualized learning is not new. Sticht (1997) describes how as early as the 1940s, the armed forces had begun to contextualize instruction to reflect the everyday life experiences of soldiers. Functional context instruction (Sticht et al., 1974), instruction based on learners' immediate needs and "life skills" (Knowles, 1980), and the importance of teaching for transfer (Mikulecky, Albers, & Peers, 1994) have been advocated by adult educators since the early 1970s.

The EFF development team drew on this knowledge base to develop its field research process (Stein, 2000). Adult learners, teachers, program directors, and content experts from around the United States engaged in an intensive process of mapping what adults commonly need to know and do to be effective in everyday

life. The EFF Role Maps, Common Activities, and Content Standards that grew out of this process provide teachers with the tools through which to help learners identify their broad purposes and immediate needs. Once these needs have been identified, teachers can work backwards to determine the knowledge, skills, and strategies learners need to accomplish the tasks. Only then do they reach the step of developing learning activities.

For reflection...

- *Think about a situation where you had a chance to learn through the active application of knowledge and skills. What difference did it make to what and how you learned?*

To encourage transfer to other contexts, effective learning requires acquiring a knowledge base of content knowledge, skills, and strategies.

To prepare adults for the future requires making sure that learning will transfer from one setting to another. The process of adapting what one has learned in one context to new problems and settings in another is known as the **transfer of learning**. Many approaches to instruction may look the same if learners are simply tested on the facts they have memorized. But approaches can differ considerably in how they foster learning transfer (Donovan, Bransford, & Pellegrino, 1999). Research has shown that knowledge learned only at the level of rote memory rarely transfers. Transfer is most likely to occur when the learner knows and understands both the facts and the "big picture"—the underlying principles that can be applied to problems in new contexts. This understanding requires acquiring a deeper knowledge base of the basic patterns, relationships, and principles related to the information. For example, the fact that a learner has memorized the parts of a typical business memo and how to punctuate sentences does not mean he will know how to use this information on the job. To do so requires that he understand the various purposes for writing memos at his workplace and how to organize and tailor what is written for different kinds of audiences. This process is also enhanced by the explicit identification and development of cognitive and metacognitive strategies.

How the EFF approach encourages transfer. The EFF Role Maps and Common Activities are important tools for promoting transfer. Using EFF, learners begin an instructional cycle by thinking about what they need to know and be able to do within and across their key life roles, such as within the family, at work, and in the community. In selecting a task to work on within one of those roles, they are guided to first look at the "big-picture" issues. For example, if they name writing memos at work as a goal, they are encouraged to examine why, to whom, and in what contexts they need to send memos before moving on to decide on a learning activity that will allow them to practice the basic skills associated with memo writing. While they are learning, they reflect on and monitor the cognitive and metacognitive skills

Students develop flexible understanding of when, where, why, and how to use their knowledge to solve new problems if they learn how to extract underlying themes and principles from their learning exercises. Understanding how and when to put knowledge to use—known as conditions of applicability—is an important characteristic of expertise.

—Bransford, Brown, & Cocking (1999)

Learners are not always able to readily identify what they are learning when using a contextual approach. Teachers use the EFF skills wheel posted in the classroom to help students identify what they have learned. Following activities, learners discuss what they have learned and how they can apply it in the various roles that they play. This approach has been particularly useful in helping learners solve difficulties in their lives. The teachers have been able to use the skills wheel to help break the challenge into manageable pieces and prioritize. In this way, learners have been able to experience increased success in resolving personal difficulties while identifying skills they possess and need to develop.

—Robin Stanton, Tacoma, Washington

For reflection...

- *Think of a situation where you have transferred knowledge or a skill learned in one context to a new context. What helped you to do so?*
- *How do you help your learners transfer what they have learned? How could you use the EFF Framework to encourage transfer of learning?*

I used to plan so that a specific learning activity would take up the hour and a half that I spent with a student; a full circle, beginning to end. I felt that this was to the student's advantage—the preview, presentation of new concepts or materials, and then closure...[Now] I like to think of activities less as a series of closed circles and more as an educational spiral. I can link one week's lessons to the next simply by considering student work as moving toward "independent action" or attaining greater "voice." With overarching views such as that, I can begin to think of my work with students as fitting a continuum of learning, which is the way I like to view attainment of literacy in general.

—Jim Carabell, Burlington, Vermont

As a family literacy program, we taught GED competencies in the context of parenting. This approach seems to make a lot of sense, since competencies break down learning into manageable chunks. Learners saw success. What they didn't see was the big picture: How these individual successes "fit" in terms of broader roles...The switch to standards-based education meant focusing on the skills, rather than the specific context...Our curriculum spirals around the skills, revisiting them within new contexts in each of the three roles. We now measure student achievement in the ability to transfer skills learned in one role to another: the ability to apply skills across contexts.

—Jane Meyer, Canton, Ohio

they are using. Once the activity is completed, learners are often asked to go back again to the Role Maps to investigate how what they have learned might transfer to other roles they play in life. For example, learners might be asked to brainstorm how what they have learned about memo writing could apply to sending notes to a child's teacher or to work they do in the community.

Learning is a function not only of the activity itself but also of the context and culture in which it takes place. Lave and Wenger (1991) point out that because our lives are social, so are our experiences and the processes by which we come to understand them. Their research has shown that, far from being a trivial matter, the social nature of learning is a central aspect of education (Lave & Wenger, 1991; Wenger, 1998). Learning always takes place within a specific social context. The classroom, the teacher, the culture of the school, and the broader community influence how people construct their definition of education and what it can do for them (Street, 1999). They learn to develop an identity within the community at the same time as they master new knowledge and skills. In teacher-directed classrooms where there is little interaction among students, students may come to see learning as something imposed by an "expert" rather than learning to see themselves as lifelong learners who construct knowledge for themselves. Within EFF-based classrooms, the aim is to design a learning environment that is simultaneously community centered, learner centered, and knowledge centered (Bransford, Brown, & Cocking, 1999; see "Designs for Learning Environments" on page 2). In these contexts, learners are encouraged to work as a collaborative team to identify and solve problems—just as scientists, mechanics, nurses, musicians, citizen group members, and parents do in everyday life. It is through these kinds of collaborative experiences that adults can come to see that learning is a process of continually transforming and being transformed by social experience (Gee, 1999).

Curriculum development as an iterative process. Planning for contextualized learning requires that teachers make a fundamental shift in their understanding of what it means to plan curricula and instruction. Instead of mapping out all the prerequisite knowledge and skills students need and planning lessons *before* discovering learners' immediate needs (Nelson & Hammerman, 1996), teachers begin with tasks learners need immediately in their daily lives and then "back into" the knowledge, skills, and strategies required to perform those tasks. This does not mean that basic skills are not covered, but they are addressed in an iterative rather than a sequential manner. These same processes

apply to curriculum development in which skills are cycled and recycled across a series of tasks. This approach allows EFF teachers to avoid the common problem of teaching a curriculum that is "a mile wide and an inch deep" (Bransford, Brown, & Cocking, 1999) and allows learners to develop a deeper understanding of the "big-picture" ideas and real-life applications.

For reflection...

- *What approach do you take to curriculum planning? How can an iterative planning approach help you to contextualize instruction?*

Putting Contextualized Learning to Work in Your Program

Results That Matter: An Approach to Program Quality Using Equipped for the Future (Bingman & Stein, 2001) provides a vision for program-level system reform (referred to as the EFF Quality Model). The **EFF Quality Model** identifies Program Practices that reflect the theoretical foundations of EFF and provides a guidepost by which administrators, teachers, students, and communities can assess their implementation of the EFF Framework. As you reflect on the examples below, think about how your program might answer the questions "What does it mean to practice EFF?" and "What does EFF implementation look like in action?"

EXAMPLE 1:
Teachers and students use the EFF Framework to construct contextualized learning opportunities that focus on the development and practice of skills the students need to carry out activities and accomplish purposes in their lives.

Karen Hippert, an ABE teacher and EFF field researcher in Ohio, describes how the idea for a learning activity arose out of a class discussion about planning for a class trip. Karen and her students had been working together for some time and decided they would like to take a trip together. Karen knew that many of her students wanted to improve their math skills but often found math hard, boring, and disconnected from their everyday lives. She used the opportunity of the class trip to suggest to the group that they plan ahead to figure out how much the trip would cost. This was a foreign concept for all the students in her class. None of them had ever applied their math skills to advance planning. Yet Karen knew that financial planning was a "big-picture" concept related to mathematical problem solving in many contexts.

Karen looked at the Standard *Use Math to Solve Problems and Communicate.* The Components of Performance for the Standard helped guide her in planning the activity: Understand, interpret, and work with pictures, numbers, and symbolic information; Apply knowledge of mathematical concepts and procedures to figure out how to answer a question, solve a problem, make a prediction, or carry out a task that has a mathematical dimension; Define and select data to be used in solving the problem; Determine the degree of precision required by the situation; Solve the problem using appropriate quantitative procedures and verify that the results are reasonable; and Communicate the results using a variety of mathematical representations, including graphs, charts, tables, and algebraic models.

With this as a guide, Karen and her students developed the activity. They began by learning how to use a mileage chart. They applied their knowledge of multiplication and division to figuring out the mileage for their trip. They also spent some time looking at when and where estimation might be a better strategy to get at an answer

For reflection...

- *How was what these students learned different from what they might have learned by simply solving problems related to calculating mileage in a math book?*
- *What might Karen do next to help learners see how the skills they had learned might apply to other kinds of planning?*

quickly. Next they learned how to read and make their own graphs and charts to compare information related to different modes of travel and vehicles. Many were surprised at what they found out about the relative costs of different kinds of travel.

As they completed the activity, Karen asked them to think about how what they had learned might transfer to other contexts. *Suddenly*, Karen observed, *it dawned on them that they could use math for all kinds of planning.* By contextualizing instruction in a real-life application, Karen's students had broken through to a new understanding of the importance of math.

EXAMPLE 2:
Teachers use the EFF Framework to integrate "found lessons" that arise from in-class or out-of-class student needs into an overall learning plan.

Jim Carabell (1999) describes how he helped one of his students to see how important and meaningful learning activities can be "found" in the events of everyday life. One day, after beginning a math lesson with Tammy, a 22-year-old single Vermont parent working toward her GED, she mentioned that a state trooper might interrupt their lesson that day. She told Jim how she was in the process of trying to untangle herself from the complications of buying a $500 car from her brother, who, through a series of events, didn't hold the title. Jim stopped what he was doing and began helping Tammy to fill out the papers she had received from the trooper at the police barracks. Together they wrote an explanatory letter to the DMV, made a couple of informational phone calls, and copied and mailed the key information to the DMV. At the end of their time together, Jim was able to show Tammy how much she had learned through this "unintentional" lesson. Tammy saw that she had achieved some of her broader purposes for learning. She had learned to gain access to information, give voice to her opinions, and act independently. What's more, she had worked in some detail on three EFF Standards: *Convey Ideas in Writing*, *Learn through Research*, and *Solve Problems and Make Decisions*. As Tammy considered how she might use these writing, research, and problem-solving skills in other parts of her life, such as in her role as a parent, she expanded her mental model of learning and became aware that her time with Jim had indeed not been wasted.

For reflection...

- *Can you think of a situation where you were able to turn a real-life situation into a "found lesson"?*
- *In what other ways can teachers use the EFF Framework to place "found lessons" into a meaningful context for adult learners?*

EXAMPLE 3:
Students use the EFF Framework to identify skills learned and practiced through real-world learning activities.

Although in many programs teachers and learners decide to work on a single standard together, in other cases a contextualized learning activity can be designed to allow learners to address different standards while working on the same activity. For example, when learners at the Canton, Ohio, Even Start Program decided to set up a family math night for their elementary school, they divided into committees based on their learning goals. Octavia, who had set a math goal, volunteered to be on the budget committee. Rosa, who had a writing goal, served on the committee that wrote a proposal to the principal requesting permission to do the project. Lou, who wanted to improve her computer skills, helped create a flyer to advertise the program. After the project was over, the program provided learners with a form to help them reflect on what they could do now that they could not do before. Octavia noted that although she already knew how to add, subtract, and multiply decimals, she had not known how to use those skills to prepare a formal budget. Already she had used what she had

For reflection...

- *How did the context and culture in which this activity took place help learners to see how they could transfer what they had learned?*

learned to develop a personal budget at home. Rosa wrote that this had been the first time she had written anything that would be read by someone as important as a principal. She realized that she had good ideas she could express through writing. Learning in a real-life context had made it easier for these students to see how they could transfer what they had learned to other contexts. (Meyer, 1999)

Glossary

Cognitive strategies: Any behavior, thought, or action a learner engages in during learning that is intended to influence the acquisition, storage in memory, integration, or availability for future use of new knowledge and skills. (See Weinstein & Hume, 1998, p. 12; Pressley & Woloshyn, 1995.)

Common Activities: The term EFF uses to refer to those activities that adults perform in all three roles (worker, family member, community member). The EFF team identified the 13 Common Activities by looking across the Broad Areas of Responsibility, the Key Activities, and the Role Indicators for each Role Map. (See Stein, 2000, p. 14; Merrifield, 2000, pp. 33-34.)

Constructivism: A theory of learning and knowing that holds that learning is an active process of knowledge construction in which learners build on prior knowledge and experience to shape meaning and construct new knowledge. (See Lambert & Walker, 1995.)

Content Standards: The term used in a variety of fields to describe what individuals need to know and be able to do for a particular purpose. In EFF, the 16 Content Standards identify what adults need to know and be able to do in order to meet their goals for learning and to be effective in their adult roles. Each EFF Content Standard consists of the title of the standard and the Components of Performance for that standard. (See *EFF Standards*, Stein, 2000, pp. 19-20.)

EFF Quality Model: A vision of what system reform at the program level looks like using EFF Standards. The EFF tools, foundational theory and research, expected program practices, and predicted short- and long-term outcomes are presented and explained in the publication *Results That Matter: An Approach to Program Quality Using Equipped for the Future* (Bingman & Stein, 2001). Ordering and downloading information can be found at http://www.nifl.gov/lincs/collections/eff/eff_publications.html.

Iterative: A term used in research to refer to the repetition of a cycle of processes with an eye toward moving ever more closely toward desired results. In EFF, the term is used to describe how EFF has progressively refined the concepts and components of EFF through research, feedback from customers (learners, practitioners, stakeholders, and policy-makers), incorporation of research developments in related areas, and further feedback from customers. (See Merrifield, 2000, pp. 4, 7-8.)

Metacognitive strategies: Metacognitive strategies consist of knowledge *about* strategies and about one's own thinking processes. They are the "executive managers" of knowledge and include planning, monitoring, evaluating, and revising one's own thinking. (See Bransford, Brown, & Cocking, 1999; Hartman, 2001.)

Role Map: A publicly agreed to, explicit, consensus depiction of the adult roles of worker, parent/family member, and citizen/community member. For each adult role, the Role Map provides definitions of the Broad Areas of Responsibility, Key Activities, and Role Indicators, which describe, not *prescribe*, effective performance in the role. (See Stein, 2000, pp. 8-13.)

Transfer of learning: The ability to extend or adapt what has been learned in one context to new problems and settings. Research has shown that when a subject is learned in *multiple* contexts, with opportunities to abstract general principles, transfer to new situations is increased. (See Bransford, Brown, & Cocking, 1999; Stein, 2000, p. 20.)

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